AMENDED CLAIMS

1. Method of providing at least one bearer service through a heterogeneous wireless network (10) for at least one application running at a mobile endpoint (12),

   characterized by the steps:

   - detecting an operational context (S14, S16) as characteristics of the mobile endpoint, characteristics of the at least one application running at the mobile endpoint, characteristics of application data to be transferred, and/or availability and capability of the at least one bearer service;

   - dynamically selecting (S18) at least one bearer service and setting up/tearing down (S20) related wireless connections provided through the heterogeneous wireless network according to the determined operational context.

2. Method according to claim 1, ***characterized in that*** it comprises the step of updating (S24, S26, S28) bearer services and/or related bearer capabilities in a bearer configuration memory.

3. Method according to claim 2, ***characterized in that*** the step of updating (S24, S26, S28) bearer services and/or

related bearer capabilities in a bearer configuration memory is executed event driven or at pre-determined points in time.

4. Method according to one of the claims 1 to 3 ***characterized in that*** it comprises the step of registering (S22) active applications running at the mobile endpoint.

5. Method according to claim 4, ***characterized in that*** the step of registering (S22) active applications registers at least type of application.

6. Method according to claim 5, ***characterized in that*** type of application is selected from a group comprising speech, audio, video, text.

7. Method according to one of the claims 4 to 6, ***characterized in that*** the step of registering (S22) active applications further registers application requirements.

8. Method according to claim 7, ***characterized in that*** application requirements are selected from a group comprising application configuration requirement and application priority.

9. Method according to claim 7, ***characterized in that*** the application configuration requirement is selected from a group comprising required QoS of application, bandwidth of application, latency of application, costs, and real-time requirements of application.

10. Method according to one of the claims 4 to 9, ***characterized in that*** application related information is stored in a selection table.

11. Method according to one of the claims 4 to 10, ***characterized in that*** the step of dynamically selecting (S18) bearer services further comprises the steps of

- negotiating (S26) at least one communication request existing for the active application against a bearer capability of the heterogeneous wireless network; and

- updating (S28) at least one assignment of an active application to an available bearer service in the heterogeneous wireless network in accordance with a negotiation result.

12. Method according to claim 11, ***characterized in that*** the step of negotiating (S26) comprises a step of generating (S22) a list of active applications in order of priority and generating a list of available bearer services and/or related bearer capabilities in the heterogeneous wireless network.

13. Method according to claim 12, ***characterized in that*** the step of negotiating (s26) further comprises the steps of

- assigning (S26) the next active application according to the order of priority to an available bearer service according to at least one pre-determined rule; and

- updating (S28) the list of available bearer services and the list of non-assigned active applications.

14. Method according to claim 11, ***characterized in that*** the step of negotiating (S26) comprises the step of evaluating a cost function for assigning each active application to each available bearer service.

15. Method according to claim 14, ***characterized in that*** the cost function allows to evaluate (S52) at least one hard assignment condition as condition that must be fulfilled.

16. Method according to claim 15, ***characterized in that*** the cost function further allows to evaluate (S56) at least one soft assignment condition as condition that should be fulfilled.

17. Method according to claim 15 or 16, ***characterized in that*** an active application will not be assigned to any available bearer service when no available bearer service fulfils the at least one hard assignment condition of the active application.

18. Method according to claim 17, ***characterized in that*** when a number of active applications exceeds the number of available bearer services, active applications will be set inactive (S42) according to predefined rules until the number of number of remaining active applications equals the number of available bearer services.

19. Method according to one of the claims 14 to 18, ***characterized in that*** it further comprises the step setting up a cost matrix (S48) for assigning active applications to available bearer services.

20. Method according to claim 19, ***characterized in that*** it further comprises the step of determining an optimal assignment (S50) of active applications to available

bearer services through application of a linear assignment algorithm to the cost matrix.

21. Method according to one of the claims 11 to 20, ***characterized in that*** the negotiating and updating steps are repeated while an application is active.

22. Method according to one of the claims 1 to 21, ***characterized in that*** the heterogeneous wireless network is using TCP/IP.

23. Method according to one of the claims 1 to 21, ***characterized in that*** the heterogeneous wireless network is using UCP/IP.

24. Method according to one of the claims 1 to 23, ***characterized in that*** the physical layer of the heterogeneous wireless network is selected from a group comprising LAN, HyperLAN, Bluetooth, IrDa, GSM, PDC, D-AMPS, IMT 2000, IS 95, 3GPP, 3WirelessGPP2.

25. Apparatus for establishing a middleware platform on top of a heterogeneous wireless network (10) in support of at least one application running at a mobile endpoint (12),

characterized by

- a middleware platform unit (16, 20, 22) adapted to detect an operational context as characteristics of the mobile endpoint, characteristics of the at least one application running at the mobile endpoint, characteristics of application data to be transferred, and/or availability and capability of the at least one bearer service;

- a bearer management unit (22) adapted to dynamically select at least one bearer service and set up/tear down related wireless connections provided through the heterogeneous wireless network according to the determined operational context.

26. Apparatus according to claim 25, ***characterized in that*** it comprises a bearer capability update unit (46) adapted to update bearer services and related capabilities in a bearer configuration table.

27. Apparatus according to claim 25, ***characterized in that*** the bearer capability update unit (46) is adapted to update bearer capabilities in a bearer configuration table in an event driven manner or at pre-determined points in time.

28. Apparatus according to one of the claims 25 to 27, ***characterized in that*** the bearer management unit (22) comprises a registration unit (42) adapted to register active applications running at the mobile endpoint.

29. Apparatus according to claim 28, ***characterized in that*** the registration unit (42) is adapted to register at least type of application.

30. Apparatus according to claim 29, ***characterized in that*** the registration unit (42) is adapted to register at least one type of application selected from a group comprising speech, audio, video, text.

31. Apparatus according to one of the claims 28 to 30, ***characterized in that*** the registration unit (42) is adapted to register application requirements.

32. Apparatus according to claim 31, ***characterized in that*** the registration unit (42) is adapted to register application requirements selected from a group comprising application configuration requirement and application priority.

33. Apparatus according to claim 32, ***characterized in that*** the registration unit (42) is adapted to register application requirements selected from a group comprising required QoS of application, bandwidth of application, latency of application, costs, and real-time requirements of application.

34. Apparatus according to one of the claims 25 to 33, ***characterized in that*** the bearer management unit 22) comprises a memory unit (40) adapted to store application related information according to a selection table data structure.

35. Apparatus according to one of the claims 25 to 34, ***characterized in that*** the bearer management unit further comprises a bearer assignment modification unit (44) adapted to

- negotiate at least one communication request existing for the active application against a bearer service and related bearer capability of the heterogeneous wireless network; and
- update at least one assignment of an active application to an available bearer service in the heterogeneous wireless network in accordance with a negotiation result.

36. Apparatus according to claim 35, ***characterized in that*** the bearer assignment modification unit (44) is adapted to generate a list of active applications in order of priority and a list of available bearer services in the heterogeneous wireless network.

37. Apparatus according to claim 36, ***characterized in that*** the bearer assignment modification unit (44) is further adapted to

- assign the next active application according to the order of priority to an available bearer service according to at least one pre-determined rule; and
- to update the list of available bearer services and/or related bearer capabilities and the list of non-assigned active applications.

38. Apparatus according to claim 35, ***characterized in that*** the bearer assignment modification unit (44) is adapted to evaluate a cost function for assigning each active application to each available bearer service and related bearer capability.

39. Apparatus according to claim 38, ***characterized in that*** the bearer assignment modification unit (44) is adapted to evaluate at least one hard assignment condition that must be fulfilled as part of the cost function.

40. Apparatus according to claim 38 or 39, ***characterized in that*** the bearer assignment modification unit (44) is adapted to evaluate at least one soft assignment condition that should be fulfilled as part of the cost function.

41. Apparatus according to claim 39 or 40, ***characterized in that*** the bearer assignment modification unit (44) is adapted to suppress assignment of an active application to any available bearer service when no available bearer capability fulfils the at least one hard assignment condition of the active application.

42. Apparatus according to claim 41, ***characterized in that*** the bearer assignment modification unit (44) is adapted to set an initially active application inactive according to predefined rules when a number of active applications exceeds the number of available bearer services, until the number of available bearer capabilities equals the number of active applications.

43. Apparatus according to one of the claims 38 to 42, ***characterized in that*** the bearer assignment modification unit (44) is adapted to set up a cost matrix for assigning active applications to available bearer services.

44. Apparatus according to claim 43, ***characterized in that*** the bearer assignment modification unit (44) is adapted to determine an optimal assignment of active applications to available bearer services through application of a linear assignment method to the cost matrix.

45. Apparatus according to one of the claims 35 to 44, ***characterized in that*** the bearer assignment modification unit (44) is adapted to repeat negotiation of bearer capabilities and update of available bearer services and/or related bearer services while an application is active.

46. Apparatus according to one of the claims 25 to 45, ***characterized in that*** the heterogeneous wireless network (10) is using TCP/IP.

47. Apparatus according to one of the claims 25 to 45, ***characterized in that*** the heterogeneous wireless network (10) is using UCP/IP.

48. Apparatus according to one of the claims 25 to 47, ***characterized in that*** the physical layer of the heterogeneous wireless network (10) is selected from a group comprising WirelessLAN, HyperLAN, Bluetooth, IrDa, GSM, PDC, D-AMPS, IMT 2000, IS 95, 3GPP, 3GPP2.

49. Computer program product directly loadable into the internal memory of a mobile communication middleware platform (16) comprising software code portions for performing the steps of one of the claims 1 to 24, when the product is run on a processor of the mobile communication middleware platform.